

In re Application of: Benjamin GELLER et al.
Serial No.: 10/553,933
Filed: October 20, 2005
Office Action Mailing Date: October 5, 2009

Examiner: Vani GUPTA
Group Art Unit: 3768
Attorney Docket: 37514
Confirmation No.: 6137

In the Claims:

1. (Currently amended) Apparatus for the ultrasonic treatment of tissue, including:

a housing having

(a) a space therewithin and an opening adapted for placement against the tissue, the housing being adapted for introducing liquid therein ~~such that when so placed, the space is filled with liquid;~~

~~an ultrasonic power source that introduces ultrasonic vibrations toward the tissue, said vibrations having a frequency and power level to an extent that cavitations are caused in the liquid at least at or near the surface of the tissue; and~~

~~an elastic interface capable of transferring acoustic energy, separating the ultrasonic power source from the liquid~~

(b) a receptacle adapted to receive and engage an ultrasonic transducer; and

(c) a flat interface suitable for separating the ultrasonic transducer from the liquid while ultrasonically coupling therebetween.

2. (Original) Apparatus according to claim 1, wherein the opening comprises a sealing element that provides a seal at the tissue.

3. (Original) Apparatus according to claim 2, wherein the seal includes a flexible element.

4. (Original) Apparatus according to claim 2, wherein the seal includes an outwardly protruding portion that is placed to contact the tissue surface.

5. (Original) Apparatus according to claim 3, wherein the seal includes an outwardly protruding portion that is placed to contact the tissue surface.

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6. (Original) Apparatus according to claim 2, wherein the seal includes an inwardly protruding portion that is placed to contact the tissue surface.

7. (Original) Apparatus according to claim 3, wherein the seal includes an inwardly protruding portion that is placed to contact the tissue surface.

8-27. (Cancelled)

28. (Withdrawn) A method for treating tissue, including:
providing a liquid in contact with a surface of the tissue;
producing a fluid current moving through the liquid, the current allowing for the removal of debris from the tissue surface; and
causing ultrasonic vibrations in the liquid to an extent that cavitations are caused at least at or near the surface of the tissue.

29. (Withdrawn) A method according to claim 28, wherein the frequency of the ultrasonic vibrations is not more than 80 kHz.

30-32. (Cancelled)

33. (Withdrawn) A method of applying ultrasound to a surface of a patient, comprising:
providing a housing having an opening at one portion thereof and having a source of acoustic energy at a portion of an inner surface thereof, the housing including an interface capable of transferring the acoustic energy;
placing the opening at the patient surface, to form a substantially closed volume in the housing;
filling the volume with liquid, so that all air is removed therefrom; and
activating the source of acoustic energy to introduce vibrations towards the patient surface,
wherein the interface blocks the liquid from the source of acoustic energy.

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34. (Withdrawn) A method according to claim 33 wherein the activation of the source causes the source to produce sufficient energy to cause cavitations in the liquid.

35. (Previously Presented) An apparatus according to claim 1, wherein the source of acoustic energy includes ultrasonic energy concentrator.

36. (Previously Presented) An apparatus according to claim 1, wherein the interface is part of the housing.

37. (Previously Presented) An apparatus according to claim 1, wherein the interface comprises an elastic barrier.

38. (Previously Presented) An apparatus according to claim 37, wherein the elastic barrier comprises polyurethane.

39. (Previously Presented) An apparatus according to claim 1, wherein at least a portion of the interface acoustically matches the liquid to an extent that prevents cavitation at the interface between the liquid and the interface.

40. (Previously Presented) An apparatus according to claim 1, wherein the housing is disposable or separately sterilizable and reusing the ultrasound power source does not require sterilization thereof.

41. (Withdrawn) A method of applying ultrasound to a surface of two patients, comprising:

- (a) providing a source of acoustic energy;
- (b) providing a first housing having an opening at one portion thereof ,
the housing including an elastic barrier;
- (c) coupling the source of acoustic energy to the elastic barrier,

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(d) placing the opening at a tissue surface of a first patient, to form in the housing a substantially closed volume separated from the source of acoustic energy by the elastic barrier;

(e) filling the volume with liquid, so that all air is removed therefrom;

(f) activating the source of acoustic energy to cause cavitations in the liquid;

(g) removing the first housing from the surface of the first patient;

(h) utilizing a second housing to replace the first housing and repeating (b) to (f) with the second housing and the second patient utilizing the same source of acoustic energy of (a).

42. (Withdrawn) A method according to claim 41, wherein the second housing is the first housing after sterilization.

43. (Withdrawn) A method for treating tissue, including:
providing a liquid in contact with a surface of the tissue;
providing a source of acoustic energy separated from the liquid by an interface formed of an elastomeric material; and
injecting ultrasonic vibrations from the source into the liquid to cause cavitations in the liquid, at least at or near the surface of the tissue.

44. (Withdrawn) Apparatus for the ultrasonic treatment of tissue, including:

a housing having a space therewithin, and an opening adapted for placement against the tissue to create a space between the housing and the tissue, the housing having an inlet canal for inletting liquid to the space, and an outlet canal, for letting the liquid out of the space, wherein the inlet canal and the outlet canal are arranged to allow continuous flow of liquid through the space; and

an ultrasonic power source that introduces ultrasonic vibrations toward the tissue, said vibrations having a frequency and power level sufficient to produce cavitation of the liquid at or near the surface of the tissue.

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45. (New) An apparatus according to claim 1, wherein the interface is made of an elastomer.

46. (New) An apparatus according to claim 1, wherein all of the housing is made of an elastomer.

47. (New) An apparatus according to claim 1, wherein the interface has acoustic properties similar to the liquid.

48. (New) An apparatus according to claim 1, wherein the apparatus is filled with liquid.

49. (New) An apparatus according to claim 48, wherein the liquid is one of a saline or a detergent.

50. (New) An apparatus according to claim 48, wherein the liquid comprises medication.

51. (New) An apparatus according to claim 1, wherein the apparatus comprises an ultrasonic transducer.

52. (New) An apparatus according to claim 51, wherein the transducer transmits into liquid introduced into the housing ultrasonic energy in an amount that causes desired cavitation at the surface of the tissue.

53. (New) An apparatus according to claim 1, further comprising a liquid inlet for introducing liquid into the housing.

54. (New) An apparatus according to claim 1, further comprising a liquid outlet for removing liquid from the housing.

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55. (New) An apparatus according to claim 1, further comprising a liquid inlet and a liquid outlet placed in the housing on opposite sides of an area of the skin to be treated, so that the liquid flows across the area.